Early postoperative basal cortisol level as good predictor of hypothalamic-pituitary-adrenal (HPA) axis function after transsphenoidal surgery for pituitary tumors

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INTRODUCTION

Accurate assessment of the hypothalamic-pituitary-adrenal (HPA) axis is important for the appropriate management of patients with pituitary tumors after transsphenoidal surgery.

OBJECTIVE

The aim of our study was to evaluate the clinical relevance of the early postoperative basal cortisol level in assessing postoperative HPA axis function.

DESING AND SETTING

We performed a retrospective analysis of 68 patients (male:female = 36:32, age 59.5 years, range 21-77) treated by transsphenoidal surgery between September 2011 and October 2014 at our Center of neuroendocrinology (44 nonfunctioning adenomas, 15 somatotrophinomas, 5 symptomatic Rathke's cleft cysts bigger than 15 mm, 3 craniopharyngeomas, and one macroprolactinoma resistant to medical therapy). Patients with Cushing's disease were excluded as well as patients with preoperative HPA insufficiency. Early postoperative basal cortisol levels (measured on the second postoperative day) and a Synacthen stimulation test (performed 10-12 weeks after the operation with a peak cortisol level of >550 nmol/L considered as normal response) were analyzed to assess HPA axis function during follow-up.

RESULTS

We found that basal cortisol level of ≥ 249.5 nmol/L measured on the second day after the operation is a sensitive and accurate predictor of normal postoperative HPA axis function, with a sensitivity of 87.8 %, and a specificity of 52.6% (Figure 1).

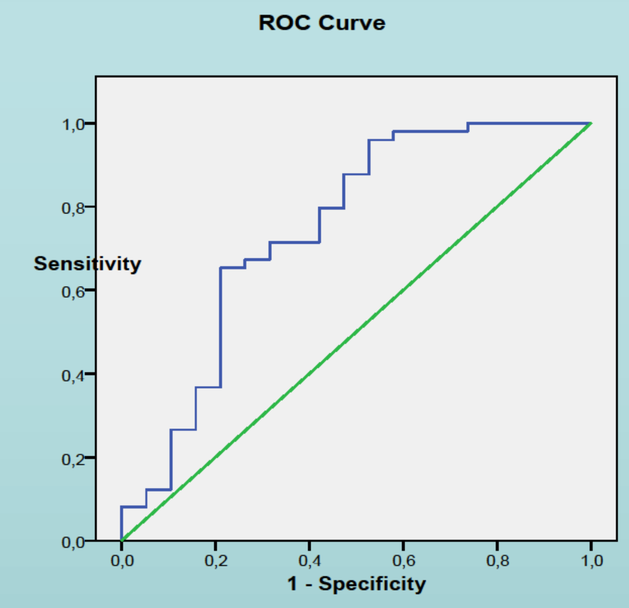

Figure 1. ROC curve for detecting normal HPA axis with day 2 postoperative serum cortisol (blue line), shown with reference line (green line)

CONCLUSION

Our data suggest that early postoperative cortisol level of ≥ 249.5 nmol/L predicts distant normal postoperative HPA axis function following transsphenoidal surgery.

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